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EXAMINER	
DUNCAN, MARC M	

ART UNIT	PAPER NUMBER
2113	

DATE MAILED: 10/27/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	**Application No.** 09/944,546	**Applicant(s)** GREY, JAMES	
	Examiner Marc Duncan	**Art Unit** 2113	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *12 August 2005*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-7,9-15 and 17-36* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-7,9-15,17-25 and 31* is/are rejected.

7)☒ Claim(s) *26-30 and 32-36* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *31 August 2001* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ .

5) ☐ Notice of Informal Patent Application (PTO-152)

6) ☐ Other: _____.

FINAL REJECTION

Status of the Claims

Claims 1-7, 11-15, 18-25 and 31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Meth et al. in view of Jenkins et al.

Claims 10 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Meth and Jenkins as applied to claims 1 and 11 above, and further in view of Shirakihara et al.

Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Meth and Jenkins as applied to claim 1 above, and further in view of Stiffler.

Claims 26-30 and 32-36 are objected to.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* v. *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.

4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 1-7, 11-15, 18-25 and 31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Meth et al. in view of Jenkins et al.

Regarding claim 1:

Meth teaches executing a program on a computer system in the entire document.

Meth teaches performing one or more snapshots of the execution of the program, wherein each snapshot is performed at a particular point during execution of the program in col. 1 lines 52-55.

Meth teaches wherein, for each snapshot, performing the snapshot comprises storing information usable to re-start execution of the program from the point at which the snapshot was performed in col. 1 lines 55-57.

Meth does not explicitly teach the process being a test executive sequence. Meth does not explicitly teach the test executive sequence comprising a plurality of steps wherein each step in at least a subset of steps calls an external code module. Meth does not explicitly teach wherein said executing the test executive sequence comprises executing the test executive sequence under control of a test executive engine, wherein the test executive engine is operable to execute each of the steps in the plurality of steps according to an order of execution specified by the test executive sequence. Meth does not explicitly teach wherein for each step in the at least a subset of steps, executing the step comprises the test executive engine invoking execution of the external code module called by the step. Meth further does not explicitly teach the point at which the snapshot is taken being a step. Meth does, however, teach an application executing on a processor.

Jenkins teaches the program being a test executive sequence in the entire document.

Jenkins teaches wherein the test executive sequence comprises a plurality of steps wherein each step in at least a subset of steps calls an external code module in Fig. 4A, Fig. 4B, col. 6 lines 23-25 and col. 12 lines 44-45.

Jenkins teaches executing the test executive sequence under control of a test executive engine, wherein the test executive engine is operable to execute each of the steps in the plurality of steps according to an order of execution specified by the test executive sequence in col. 12 lines 44-45, col. 13 lines 45-47, col. 13 lines 56-59 and col. 14 lines 31-39.

Jenkins teaches wherein for each step in the at least a subset of steps, executing the step comprises the test executive engine invoking execution of the external code module called by the step in Fig. 4A, Fig. 4B, col. 6 lines 23-25, col. 12 lines 44-45, col. 13 lines 45-47, col. 13 lines 56-59 and col. 14 lines 31-39.

The combination of Jenkins and Meth inherently teaches the point at which the snapshot is taken being a step. Jenkins teaches the application including steps. Meth teaches taking a snapshot. It is necessarily true, then, that the point at which a snapshot is taken in the combination of Meth and Jenkins is a particular step.

It would have been obvious to one of ordinary skill in the art at the time of invention to combine the test executive sequence of Jenkins with the method of checkpointing an application of Meth.

One of ordinary skill in the art at the time of invention would have been motivated to combine the teachings because Meth teaches checkpointing an application. Meth teaches that checkpointing allows the application to be restarted from a checkpoint, rather than from the beginning, in the case of a failure during execution. Jenkins teaches a specific type of application that could be utilized with the checkpoint method of Meth to provide a reliable, failure-tolerant test executive sequence.

Regarding claim 2:

Meth teaches stopping execution of the test executive sequence after a particular snapshot is performed in col. 1 lines 55-57.

Meth teaches re-starting execution of the test executive sequence from the point at which the particular snapshot was performed in col. 1 lines 55-57.

Meth teaches wherein said re-starting execution of the test executive sequence comprises using the stored information of the snapshot to restore an execution environment of the computer system so that the test executive sequence can execute correctly from the point at which the particular snapshot was performed in the Abstract lines 7-8 and lines 14-16.

Regarding claim 3:

Meth teaches wherein said restoring the execution environment of the computer system comprises using the stored information of the snapshot to re-create a stack frame of the computer system in col. 3 lines 3-5 and col. 4 lines 41-46.

Regarding claim 4:

Meth teaches wherein said re-creating the stack frame comprises placing data on the stack frame so that the stack frame is in a state as if execution of the test executive sequence had run to the point at which the particular snapshot was performed in col. 3 lines 3-5 and col. 4 lines 41-46.

Regarding claim 5:

Meth teaches wherein said restoring the execution environment of the computer system comprises making the execution environment of the computer system substantially the same as when the particular snapshot was performed in col. 4 lines 34-55.

Regarding claim 6:

Meth teaches wherein said storing the information comprises persistently storing the information in Fig. 12, col. 12 lines 26-27 and col. 13 lines 4-6.

Regarding claim 7:

Meth teaches wherein said storing information comprises storing one or more of: a variable value; a property value in col. 6 lines 32-35.

Regarding claim 11:

Claim 11 is rejected as the computer program product storing program instructions for performing the method of claim 1.

Regarding claim 12:

Claim 12 is rejected as the computer program product storing program instructions for performing the method of claim 2.

Regarding claim 13:

Claim 13 is rejected as the computer program product storing program instructions for performing the method of claim 3.

Regarding claim 14:

Claim 14 is rejected as the computer program product storing program instructions for performing the method of claim 6.

Regarding claim 15:

Claim 15 is rejected as the computer program product storing program instructions for performing the method of claim 7.

Regarding claim 18:

Meth teaches a processor in Fig. 1A.

Meth teaches a first memory medium storing a computer program in Fig. 1A.

Meth teaches wherein the processor is operable to execute the computer program in the entire document.

Meth teaches wherein the processor is operable to perform one or more snapshots of the execution of the computer program, wherein each snapshot is performed at a particular point during execution of the computer program in col. 1 lines 52-55.

Meth teaches wherein, for each snapshot, performing the snapshot comprises storing information usable to re-start execution of the computer program from the point at which the snapshot was performed in col. 1 lines 55-57.

Meth does not explicitly teach the process being a test executive sequence. Meth does, however, teach a program executing on a computer.

Jenkins teaches the program being a test executive sequence in the entire document.

Jenkins teaches wherein the test executive sequence comprises a plurality of steps wherein each step in at least a subset of steps calls an external code module in Fig. 4A, Fig. 4B, col. 6 lines 23-25 and col. 12 lines 44-45.

Jenkins teaches executing the test executive sequence under control of a test executive engine, wherein the test executive engine is operable to execute each of the steps in the plurality of steps according to an order of execution specified by the test executive sequence in col. 12 lines 44-45, col. 13 lines 45-47, col. 13 lines 56-59 and col. 14 lines 31-39.

Jenkins teaches wherein for each step in the at least a subset of steps, executing the step comprises the test executive engine invoking execution of the external code module called by the step in Fig. 4A, Fig. 4B, col. 6 lines 23-25, col. 12 lines 44-45, col. 13 lines 45-47, col. 13 lines 56-59 and col. 14 lines 31-39.

The combination of Jenkins and Meth inherently teaches the point at which the snapshot is taken being a step. Jenkins teaches the application including steps. Meth teaches taking a snapshot. It is necessarily true, then, that the point at which a snapshot is taken in the combination of Meth and Jenkins is a particular step.

It would have been obvious to one of ordinary skill in the art at the time of invention to combine the test executive sequence of Jenkins with the method of checkpointing an application of Meth.

One of ordinary skill in the art at the time of invention would have been motivated to combine the teachings because Meth teaches checkpointing an application. Meth teaches that checkpointing allows the application to be restarted from a checkpoint, rather than from the beginning, in the case of a failure during execution. Jenkins teaches a specific type of application that could be utilized with the checkpoint method of Meth to provide a reliable, failure-tolerant test executive sequence.

Regarding claim 19:

Meth teaches a second memory medium providing a persistent storage means in Fig. 12.

Meth teaches wherein said storing information comprises persistently storing the information on the second memory medium col. 12 lines 26-27 and col. 13 lines 4-6.

Regarding claim 20:

Meth teaches executing a program on a computer system in the entire document.

Meth teaches performing one or more snapshots of the execution of the program, wherein each snapshot is performed at a particular point during execution of the program in col. 1 lines 52-55.

Meth teaches wherein, for each snapshot, performing the snapshot comprises storing information usable to re-start execution of the program from the point at which the snapshot was performed in col. 1 lines 55-57.

Meth does not explicitly teach the process being a test executive sequence hierarchy. Meth does not explicitly teach wherein the test executive sequence hierarchy includes a plurality of test executive sequences related to each other according to a hierarchical relationship, wherein each of the test executive sequences includes a plurality of tests. Meth does, however, teach a program executing on a computer.

Jenkins teaches the program being a test executive sequence hierarchy in the entire document.

Jenkins also teaches wherein the test executive sequence hierarchy includes a plurality of test executive sequences related to each other according to a hierarchical relationship, wherein each of the test executive sequences includes a plurality of tests in Fig. 4A and col. 13 lines 7-47.

It would have been obvious to one of ordinary skill in the art at the time of invention to combine the test executive sequence of Jenkins with the method of checkpointing an application of Meth.

One of ordinary skill in the art at the time of invention would have been motivated to combine the teachings because Meth teaches checkpointing an application. Meth teaches that checkpointing allows the application to be restarted from a checkpoint, rather than from the beginning, in the case of a failure during execution. Jenkins teaches a specific type of application that could be utilized with the checkpoint method of Meth to provide a reliable, failure-tolerant test executive sequence.

Regarding claim 21:

Meth teaches wherein, for each snapshot, performing the snapshot comprises the test executive engine storing information representing execution results of steps in the test executive sequence executed prior to the step at which the snapshot is performed in the Abstract lines 7-8 and lines 14-16. Meth teaches checkpointing an environment that includes executable information, register contents, stack contents, etc. In the combination with Jenkins, it is necessarily true that this environment includes the results of the previous steps.

Regarding claim 22:

Meth teaches wherein said storing information representing execution results of steps in the test executive sequence executed prior to the step at which the snapshot is performed comprises storing information representing execution results of external code modules called by steps executed prior to the step at which the snapshot is performed in the Abstract lines 7-8 and lines 14-16. Meth teaches checkpointing an environment that includes executable information, register contents, stack contents, etc. In the combination with Jenkins, it is necessarily true that this environment includes the results of the previous steps, which, of course, include the results from the external code modules that those steps call.

Regarding claim 23:

Meth teaches wherein said restoring the execution environment of the computer system comprises using the stored information of the snapshot to restore results of steps in the test executive sequence executed prior to the step at which the particular snapshot was performed in the Abstract lines 7-8 and lines 14-16. Meth teaches restoring the entire execution environment.

Regarding claim 24:

Meth teaches wherein said restoring results of steps in the test executive sequence executed prior to the step at which the particular snapshot was performed comprises restoring execution results of external code modules called by steps executed prior to the step at which the particular snapshot was performed in the Abstract lines 7-8 and lines 14-16. Meth teaches restoring the entire execution environment.

Regarding claim 25:

Jenkins teaches wherein said stopping execution of the test executive sequence after the particular snapshot is performed comprises stopping execution of the test executive sequence in response to a failure condition in col. 13 line 15.

Regarding claim 31:

Meth teaches wherein said test executive engine performing one or more snapshots of the execution of the test executive sequence comprises the test executive engine performing a first particular snapshot in the Abstract. Meth teaches taking snapshots. The first of those snapshots is a first particular snapshot.

Meth teaches wherein the first particular snapshot is not performed directly in response to the test executive engine executing a step in the test executive sequence. Meth does not teach performing the first particular snapshot in response to the engine executing a step in the sequence and therefore teaches this limitation.

Claims 10 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Meth and Jenkins as applied to claims 1 and 11 above, and further in view of Shirakihara et al.

Regarding claims 10 and 17:

The teachings of Meth and Jenkins are outlined above.

Meth and Jenkins do not explicitly teach wherein the snapshots are performed periodically according to a particular time interval. Meth and Jenkins do, however, teach checkpointing at particular intervals.

Shirakihara teaches wherein the snapshots are performed periodically according to a particular time interval in col. 1 lines 22-27.

It would have been obvious to one of ordinary skill in the art at the time of invention to combine the particular interval teaching of Meth and Jenkins with the time intervals of Shirakihara.

One of ordinary skill in the art at the time of invention would have been motivated to combine the teachings because Shirakihara discloses that this is a conventional method of performing checkpointing.

Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Meth and Jenkins as applied to claim 1 above, and further in view of Stiffler.

Regarding claim 9:

The teachings of Meth and Jenkins are outlined above.

Meth and Jenkins do not explicitly teach receiving user input specifying criteria for when to perform the snapshots. Meth and Jenkins do, however, teach performing snapshots at particular intervals and the user specifying the sequence of various actions during the test execution.

Stiffler teaches receiving user input specifying criteria for when to perform the snapshots in col. 2 lines 44-47.

It would have been obvious to one of ordinary skill in the art at the time of invention to combine the user input teachings of Stiffler with the checkpointing and user input teachings of Meth and Jenkins.

One of ordinary skill in the art at the time of invention would have been motivated to combine the teachings because Stiffler teaches that the application programmer traditionally must determine when take a checkpoint, i.e. specifying criteria for when to perform a checkpoint. This satisfies an inherent requirement of Meth and Jenkins, who require the user to specify the sequence of the test.

Response to Arguments

Applicant's arguments filed 8/12/05 have been fully considered but they are not persuasive.

In response to applicant's argument that there is no suggestion to combine the references, the examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988)and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). In this case, Meth teaches the clear benefits of checkpointing an application with independent processes running. Meth does not explicitly teach a type of application and implicitly requires a type of application on which to utilize the checkpointing invention. Jenkins provides an application meeting this implicit requirement.

In response to applicant's arguments that the Meth and Jenkins inventions are substantially different from one another, the examiner respectfully disagrees. Meth teaches checkpointing a parallel program, wherein a parallel program is defined as a plurality of processes independently executed. Jenkins teaches a diagnostic application that executes a plurality of independent test modules in a multi-tasking fashion. The examiner submits that independently executed processes present in both inventions are not substantially different from one another.

In response to applicant's arguments that the claim requires a central entity to perform snapshots and that such an entity is not present in Meth, the examiner respectfully disagrees. Meth teaches, in the Abstract, that a coordinating process is responsible for controlling when the snapshots are taken. This is certainly a central entity that is responsible for performing the snapshots.

In response to applicant's argument that Jenkins and Meth are nonanalogous art, it has been held that a prior art reference must either be in the field of applicant's endeavor or, if not, then be reasonably pertinent to the particular problem with which the applicant was concerned, in order to be relied upon as a basis for rejection of the claimed invention. See *In re Oetiker*, 977 F.2d 1443, 24 USPQ2d 1443 (Fed. Cir. 1992). In this case, Jenkins is clearly in the field same field of applicant's endeavor. Meth is clearly pertinent to the particular problem with which applicant was concerned, i.e. performing snapshots on a program to be used to restart execution of the application.

In response to applicant's arguments that there is no test executive sequence hierarchy present in the Jenkins reference, the examiner respectfully disagrees. There are multiple levels, arranged hierarchically, in the Jenkins reference. Within each station, there is a sequence of devices to be tested, which devices are related in a hierarchical manner (see col. 13 lines 59-62 concerning the power cycle device). Within each device there is a sequence of tests to be run for that specific device. This is clearly a hierarchical relationship of sequences, with the station placed above the devices which in turn are placed above the specific tests for each device.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Marc Duncan whose telephone number is 571-272-3646. The examiner can normally be reached on M-F 9:00-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert Beausoliel can be reached on 571-272-3645. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

md

Robert W Beausoliel

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